CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.14/RS/CSR-04/005b/QB(BC)/2016-17 10.05.2016

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

***CUSTOMER**	:	**Asst. Executive Engineer**, T. Dasarahalli Sub Division, BBMP, Bangalore.
***AGENCY**	:	**Mr. R. Shivaram,** # 4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 23.
***NAME OF THE WORK**	:	Improvements to roads and drains at Vijayalakshmi Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	:	BBMP/DZ/AEE/TDSD/PR/2016-17 Dated: 06.04.2016
***SAMPLE ID**	:	Bitumen
DATE OF SAMPLING	:	06.05.2016
DATE OF TESTING	:	10.05.2016

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	63	60 to 70
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	48	Min. 45
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 50
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	292	Min. 220

*Information is furnished by the Customer/Representative.

Civil-Tech Consultants & Engineers Bangalore

Note:

⇒ This test report shall not be reproduced except in full, without written approval of the laboratory.

⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

****

VISHWANATH. I.A.
Chief Executive Officer

ASSISTANT EXECUTIVE ENGINEER
DASARAHALLI SUB DIVISION

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.14/RS/BC/AIV/2016-17 10.05.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Mr. R. Shivaram,** # 4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 23.
Name of the Work	Improvements to roads and drains at Vijayalakshmi Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2016-17 Dated: 06.04.2016
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	10.05.2016

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	375	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297	296	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	20.80	21.90	**21.35**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

⇒ This test report should not be reproduced except in full, without written approval of the laboratory

⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory

⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross, 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

ASSISTANT EXECUTIVE ENGINEER
DASARALLI SUBDIVISION

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.14/RS/BC/Shape.T/2016-17 : 10.05.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Mr. R. Shivaram,** # 4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 23.
Name of Work	: Improvements to roads and drains at Vijayalakshmi Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2016-17 Dated: 06.04.2016
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Bituminous Concrete
Date of Testing	: 10.05.2016

Result : Flakiness Index = **11.65%**

Elongation Index = **13.82%**

Result : Combined Flakiness & Elongation index **25.47%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

Note:

⇒ This test report should not be reproduced except in full, without written approval of the laboratory

⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory

⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

****

ASSISTANT EXECUTIVE ENGINEER
DASARALLI SUB DIVISION

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.14/RS/BC/Stripping/2016-17

12.05.2016

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Mr. R. Shivaram,** # 4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 23.
Name of the Work	Improvements to roads and drains at Vijayalakshmi Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2016-17 Dated: 06.04.2016
Type of Mix	Bituminous Concrete
Date of Testing	12.05.2016

Type of binder : 60/70

Percentage of binder used : 5.00% by wt.

Total weight of aggregate : 200 g

Total weight of binder : 10.00 g

Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	2.9	3.10	96.90
2	3.1		
3	3.3		

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

Note:

1. This test report should not be reproduced except in full, without written approval of the laboratory
2. The results indicated above are based on the tests carried out on the samples received in the laboratory
3. Any Query regarding the report must be reported within 30 days from the date of testing.

****

ASSISTANT EXECUTIVE ENGINEER
DASARALLI SUB DIVISION

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.14/RS/BC/Sp_Wa/2016-17 12.05.2016

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Mr. R. Shivaram,** # 4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 23.
Name of the Work	Improvements to roads and drains at Vijayalakshmi Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2016-17 Dated: 06.04.2016
Type of Mix	Bituminous Concrete
Date of Testing	12.05.2016

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	1998	1999	2000	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1245	
4	Weight of saturated surface dry aggregate in air	W_3 g	2023	2024	2025	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	784	786	780	
6	Weight of oven dried aggregate	W_4 g	2010	2012	2014	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.564	2.560	2.582	2.569
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.607	2.599	2.619	2.608
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.65%	0.60%	0.55%	0.60%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

Note:

⇒ This test report should not be reproduced except in full, without written approval of the laboratory

⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory

⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

****

ASSISTANT EXECUTIVE ENGINEER
DASARALLI SUB DIVISION

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.14/RS /BC/Stability/2016-17 12.05.2016

TEST REPORT ON STABILITY OF MIX

Customer	:	**Asst. Executive Engineer**, T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. R. Shivaram,** # 4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 23.
Name of Work	:	Improvements to roads and drains at Vijayalakshmi Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	:	BBMP/DZ/AEE/TDSD/PR/2016-17 Dated: 06.04.2016
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	12.05.2016

The results of the tests conducted on the bituminous concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.65	10.10	9 Kn (min)
2	Marshal flow, mm	3.40	2.85	2 – 4
3	Percent air voids in Mineral Aggregate	4.95	5.20	3 – 6
4	Voids in Compacted Mix	14.70	13.25	13 – 15
5	Percent Voids filled with Bitumen	68.95	69.10	65 - 75
6	Density, g/cc	2.27	2.28	--

Note:

⇒ This test report shall not be reproduced except in full, without written approval of the laboratory.

⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

****

ASSISTANT EXECUTIVE ENGINEER
DASARAHALLI SUB DIVISION

Civil-tech Consultants & Enginee
#23/14, 7th Cross, 3rd Stage 4th Block
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com